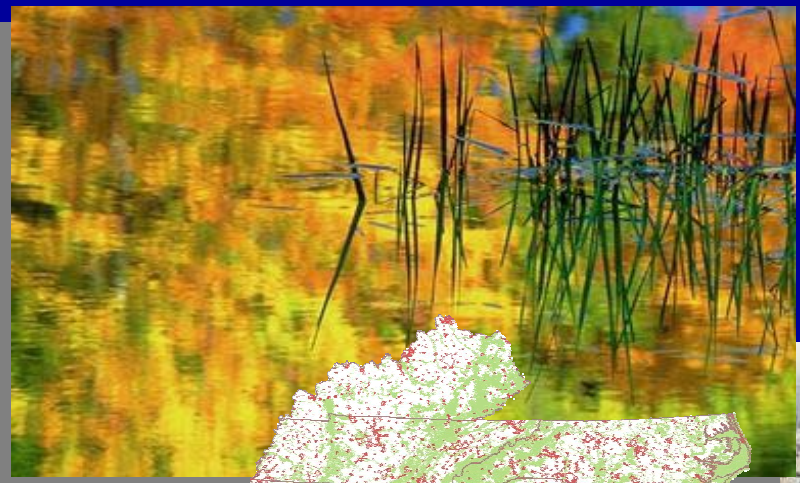
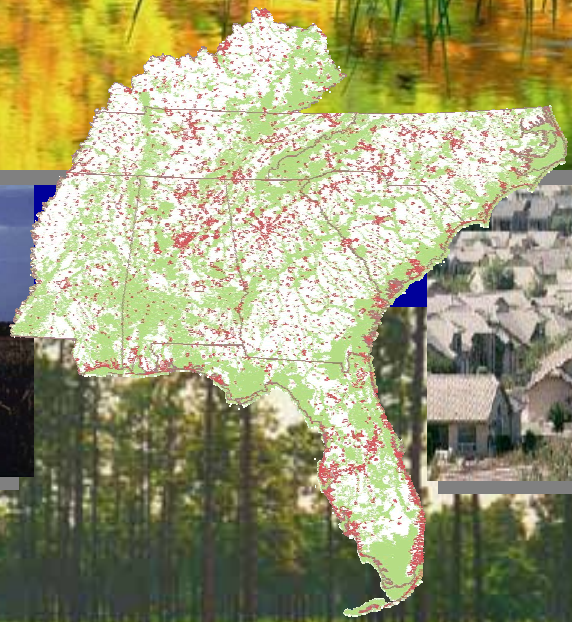
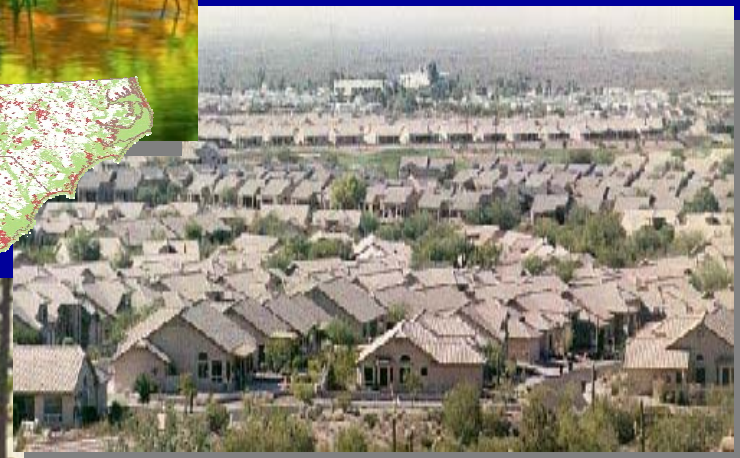
Southeastern Ecological Framework







Cory Berish EPA

Margaret Carr, UFL

Rick Durbrow, EPA

Tom Hoctor, UFL

John Richardson, EPA

Neil Burns, EPA

Paul Zwick, UFL



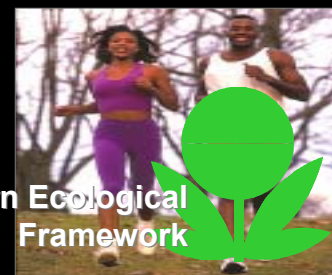










Southeast Natural Resource Leaders Group (SENRLG)

TVA

US Army Corps of Engineers

USDA NRCS Natural Resources Conservation Service

USGS science for a changing world

U.S. Department of Transportation Federal Highway Administration

Southeastern Ecological Framework

The Value of Ecosystems

Environmental services often taken for granted:

- **Recreation**
- **Water and air filtration**
- **Flood protection**
- **Biodiversity**

Endangered Ecosystems of the United States

- **States considered to be at highest risk of species loss are in the Southeastern US** ***(Florida, Georgia, North Carolina, South Carolina, Alabama and Tennessee)***

- **Most endangered ecosystems/landscapes in the southeastern U.S. include:**

Longleaf Pine Forests
Florida Scrub
Forested Wetlands

Bluegrass Savanna Woodlands
High Elevation Mountain Bogs
Spruce Fir Forests

Rivers Supporting Rare Mussels & Fish

Protecting Functional Habitat Juxtapositions

Longleaf Pine Sandhill
less than 10% remaining

Bottomland Hardwoods

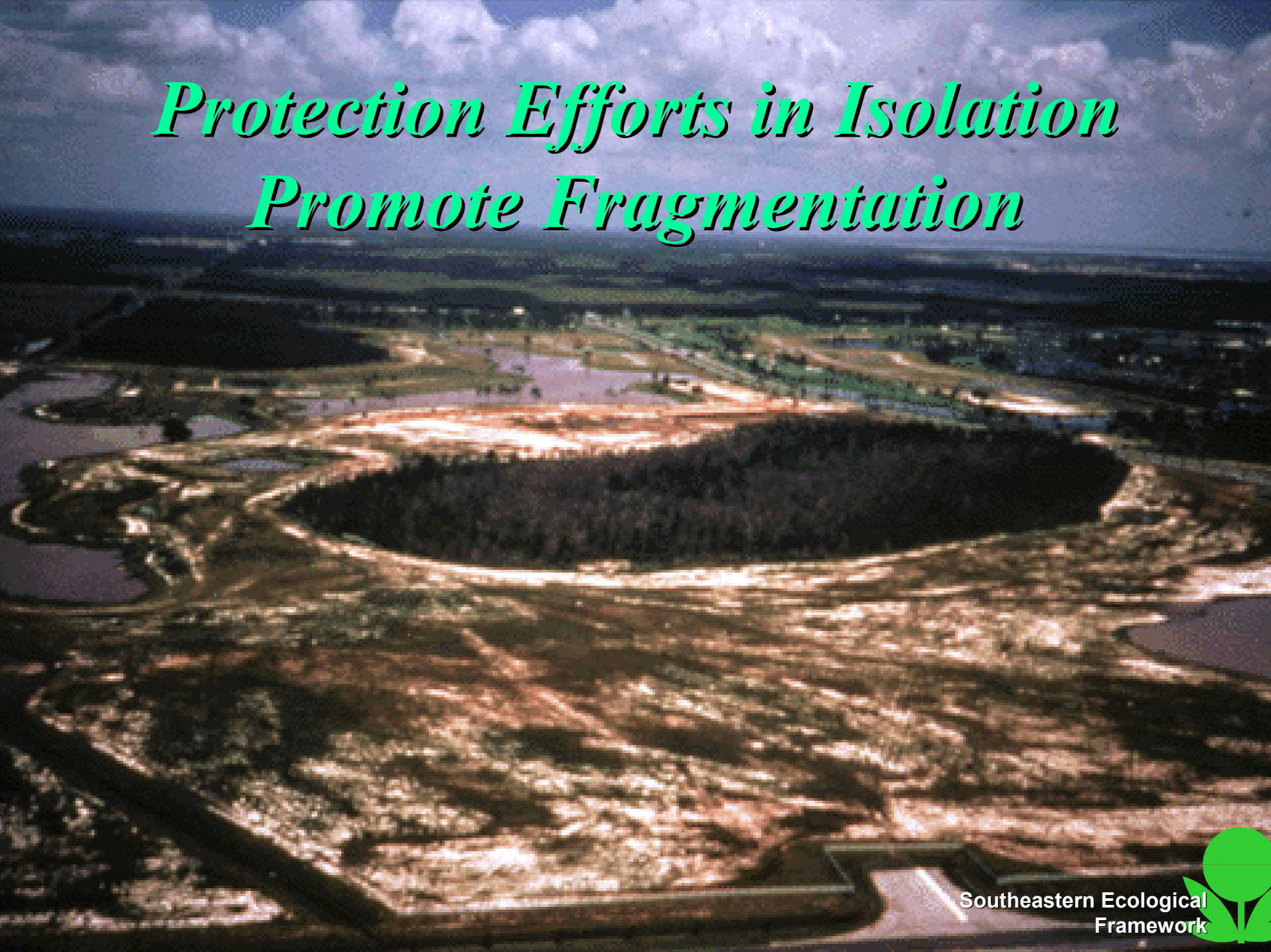
Southeastern Ecological Framework

Current Protection Efforts

Piece-meal protection - focuses on local species and individual systems – misses big picture

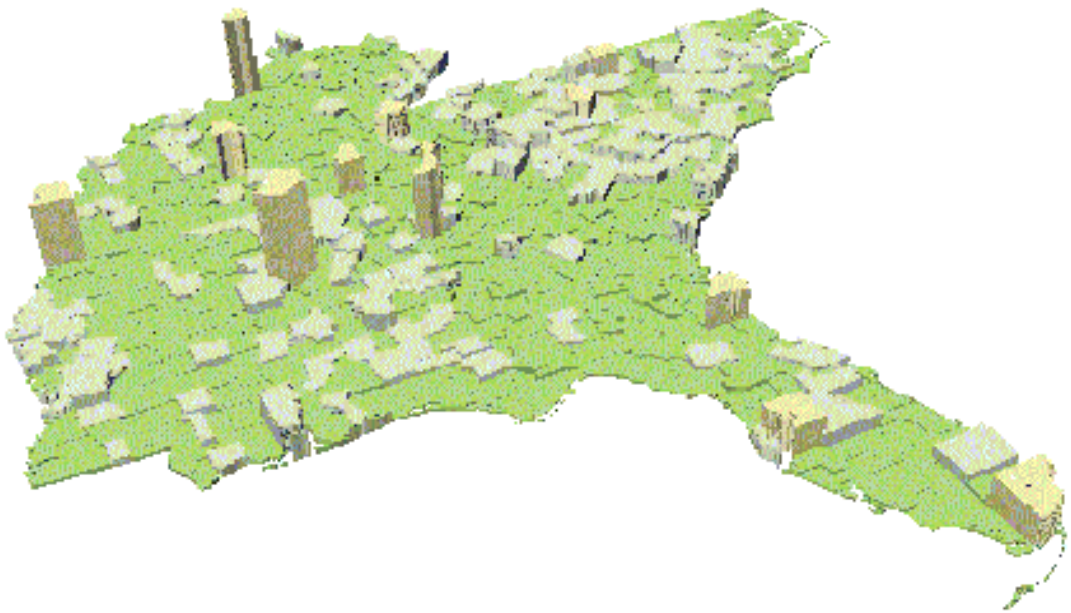
Leads to larger ecosystem degradation and further fragmentation – misses corridors

Many large-scale processes no longer able to function


Protection Efforts in Isolation
Promote Fragmentation
Southeastern Ecological
Framework

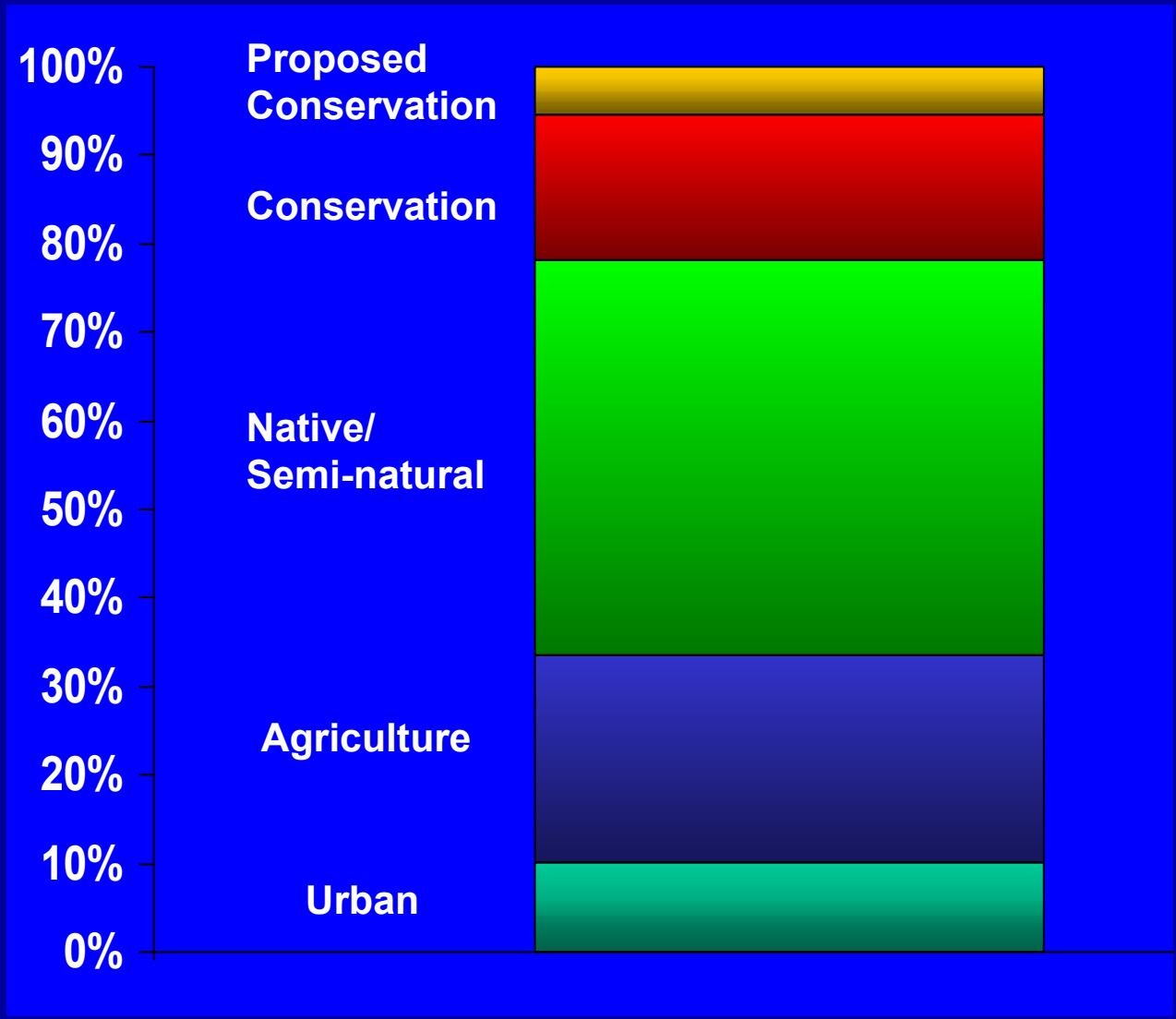
And Away We Grow…

1930



Southeastern Ecological Framework

The Race

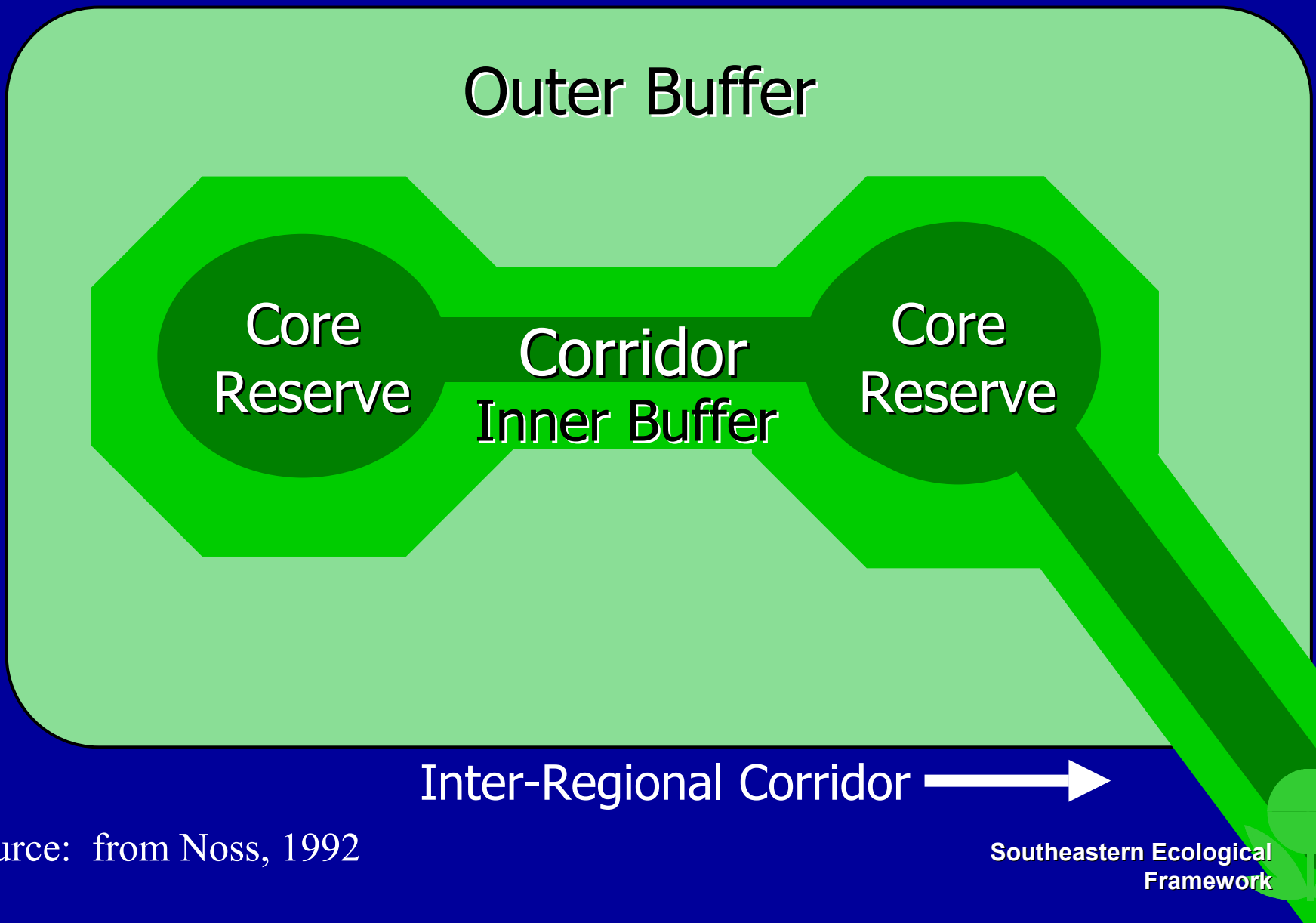


The Prize

Florida Land Use - 1990

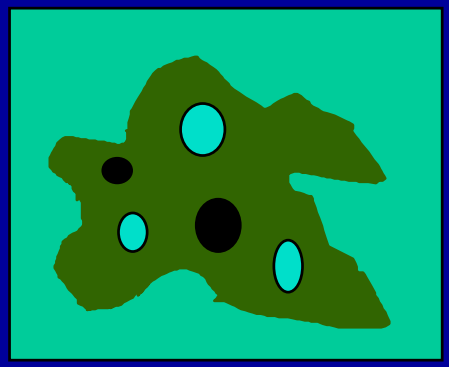
Southeastern Ecological Framework

Model Ecological Network

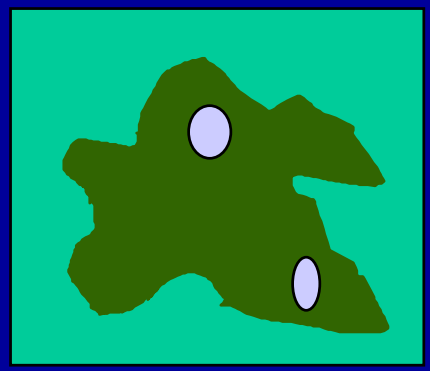


Source: from Noss, 1992

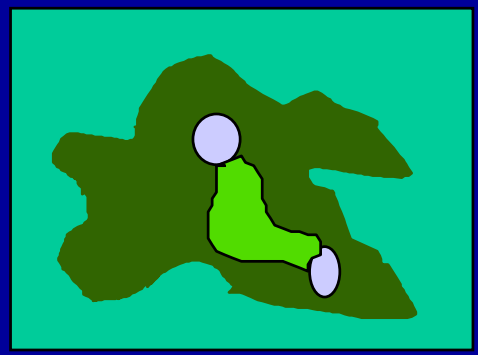
Hub/Corridor Modeling Steps



Step 1 - Identify:
Areas of Ecological Significance



Step 2 - Select:
Ecological Hubs

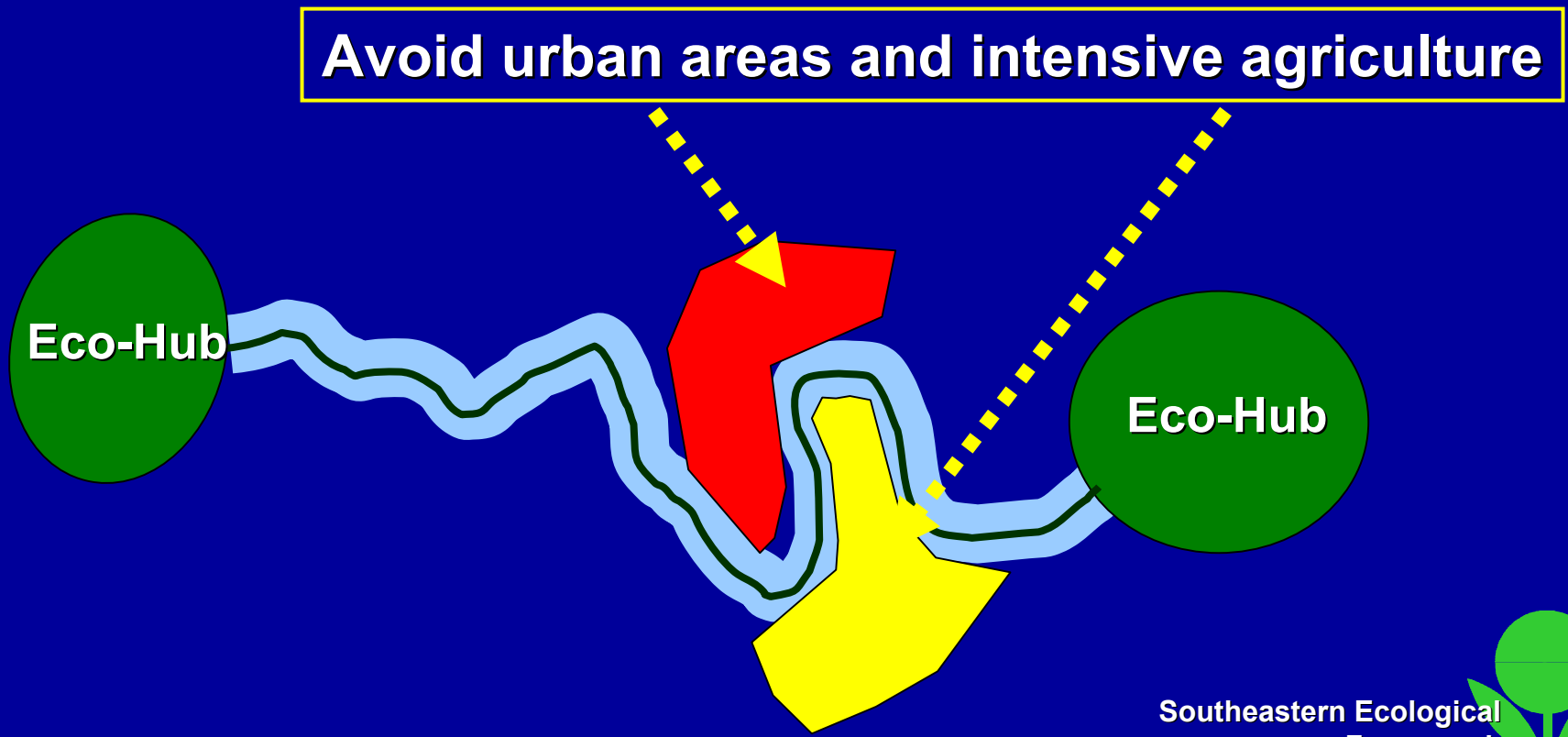


Step 3 - Delineate:
Landscape Linkages

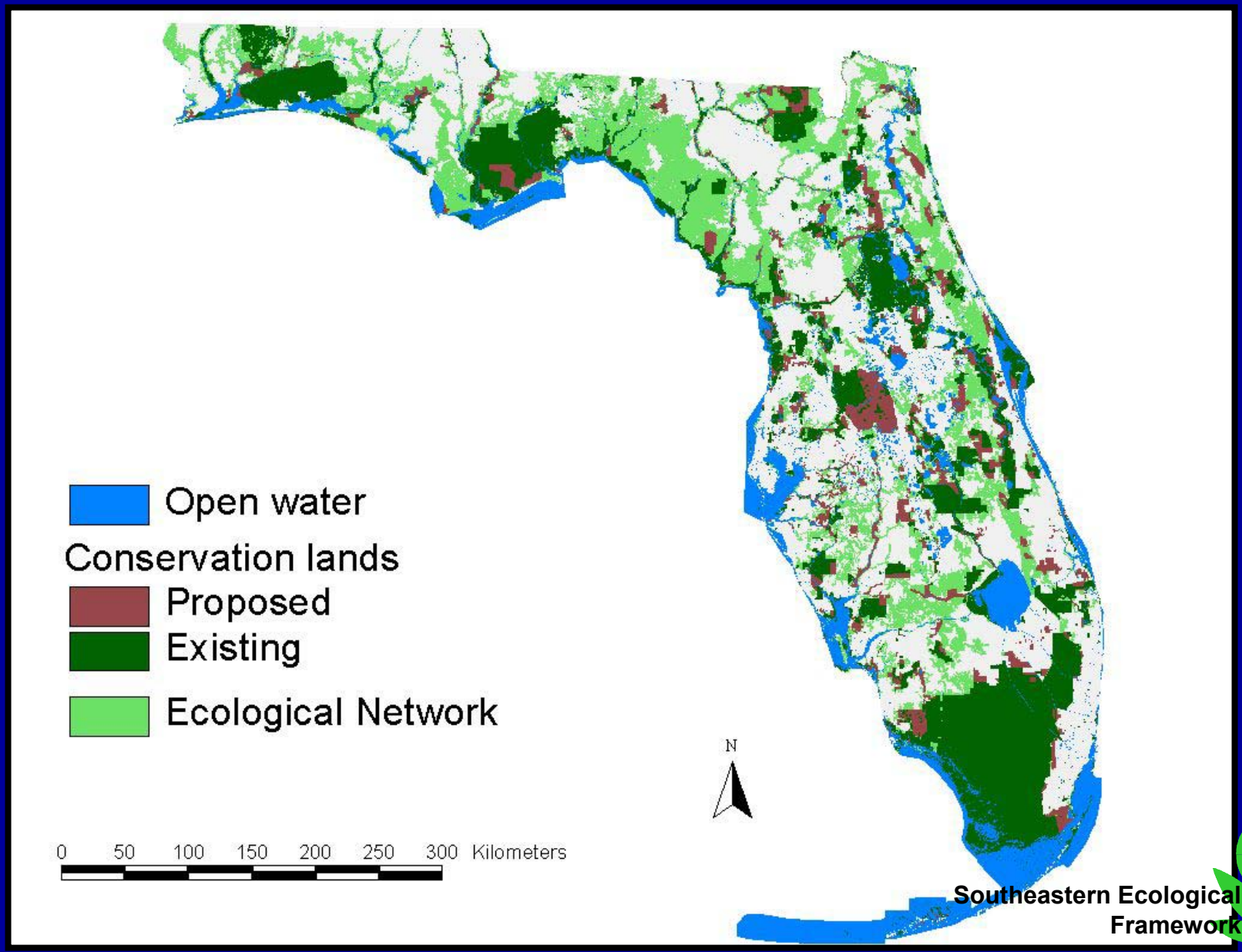
Ecological Cost Surface Analysis

Find a path between ecological hubs representing the best "ecological pathway" between the hubs.

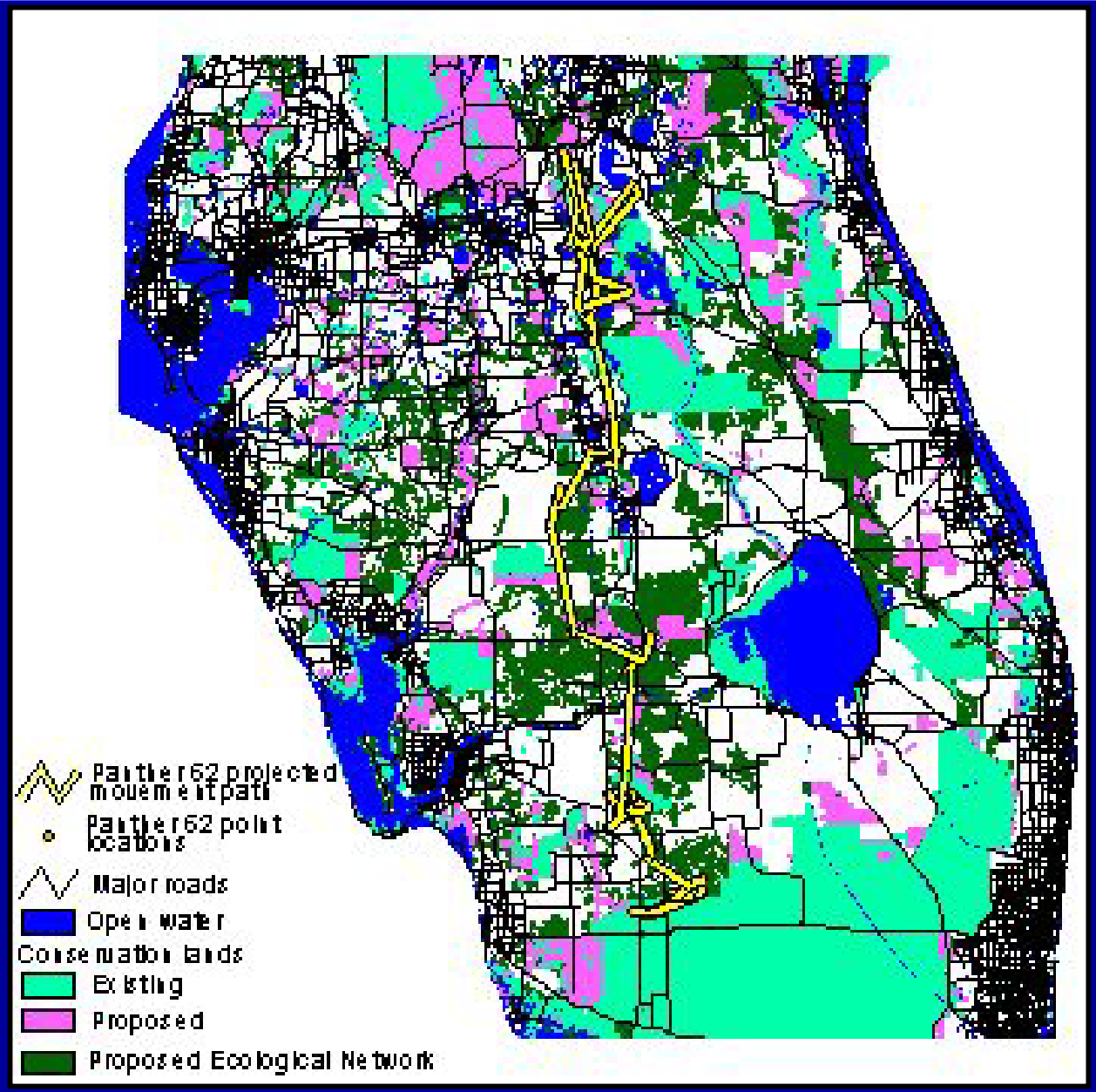
Cost is not monetary, but is ecological.



Florida Ecological Network



Panther 62 Movements and the Ecological Network



Southeastern Ecological Framework

Florida Forever Draft Biodiversity Goals

GOAL D: Increase the protection of Florida's biodiversity at the species, natural community, and landscape levels.

Measure D1: Acres of significant Strategic Habitat Conservation Areas (identified by FWCC) acquired through fee simple or alternatives to fee simple.

Measure D2: Acres of highest priority conservation areas for Florida's rarest species and communities (identified in the conservation plan developed by FNAI).

Measure D3: Acres of significant landscapes linkages and conservation corridors (identified by the Florida Greenways Project).

Measure D4: Acres of under-represented native ecosystems (identified by DEP), expressed as a percentage of the cumulative total of the original acres of the identified under-represented native ecosystems.

Measure D5: Number of landscape-sized protection areas (≥50,000 acres) established through new acquisition projects, or augmentations to previous projects.

Mission of the Ecological Framework

Protect Critical Ecosystem Function

Goals of the Ecological Framework

Identify critical Hubs of unfragmented natural ecosystems.
Identify connectivity among landscapes that support ecosystem processes.

Objectives of the Ecological Framework

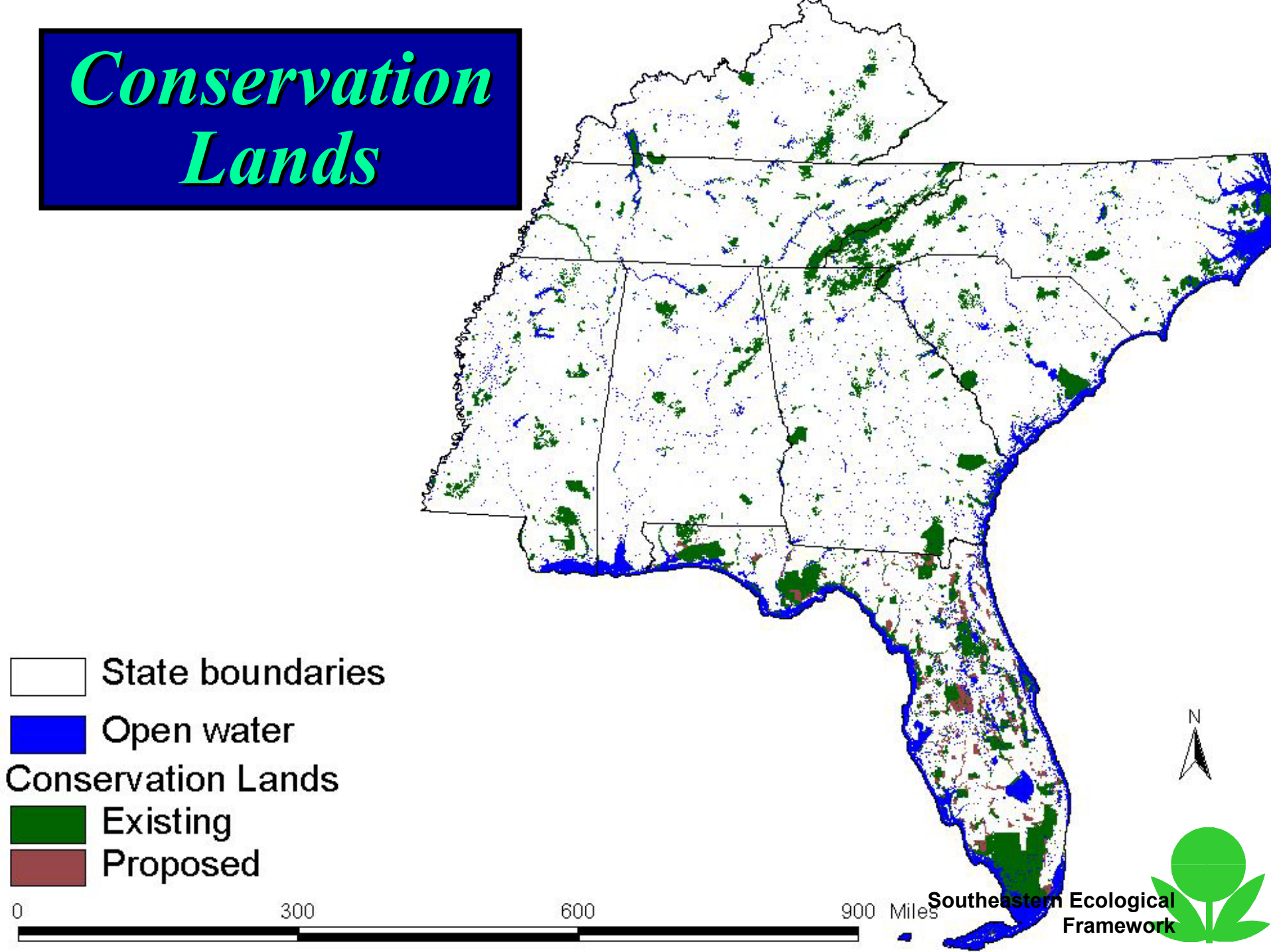
Facilitate the ability of these ecosystems and landscapes to function as dynamic systems.
Maintain the ability of these ecosystems to adapt to future environmental changes.

Priority Ecological Area Data Layers

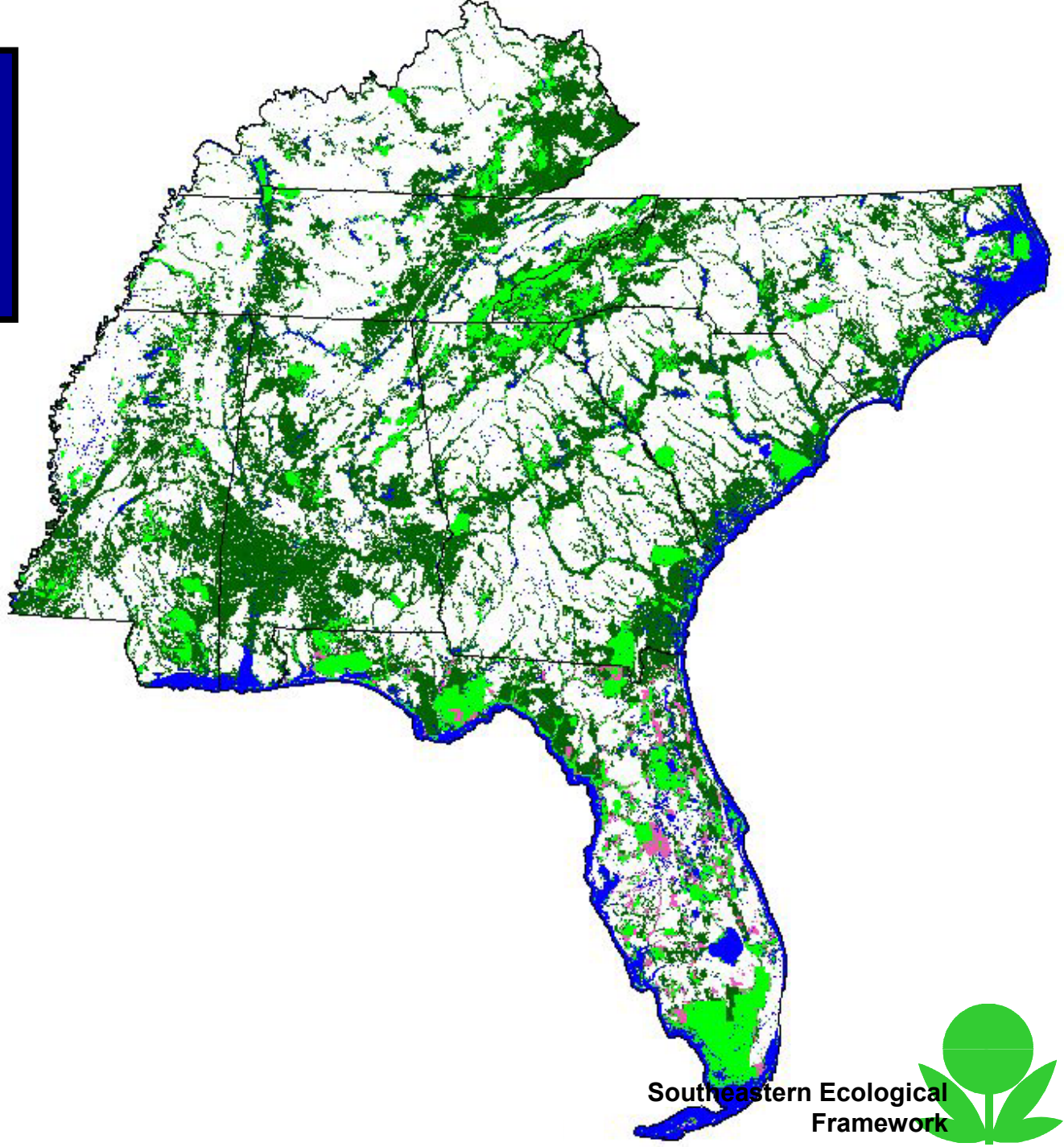
- Roadless Areas (5,000 acres or less)
- Federal and other conservation lands
- Areas with high stream reach densities
- Biodiversity hotspots
- Critical species conservation areas

- Unique areas (National Heritage Programs, Nature Conservancy)
- Areas with significant longleaf pine stands or “old-growth” forest
- Coastal Barrier Resource Act Lands and National Estuarine Research Reserves

Conservation Lands



Southeastern Ecological Framework



State boundaries

Open water

Conservation Lands

Existing

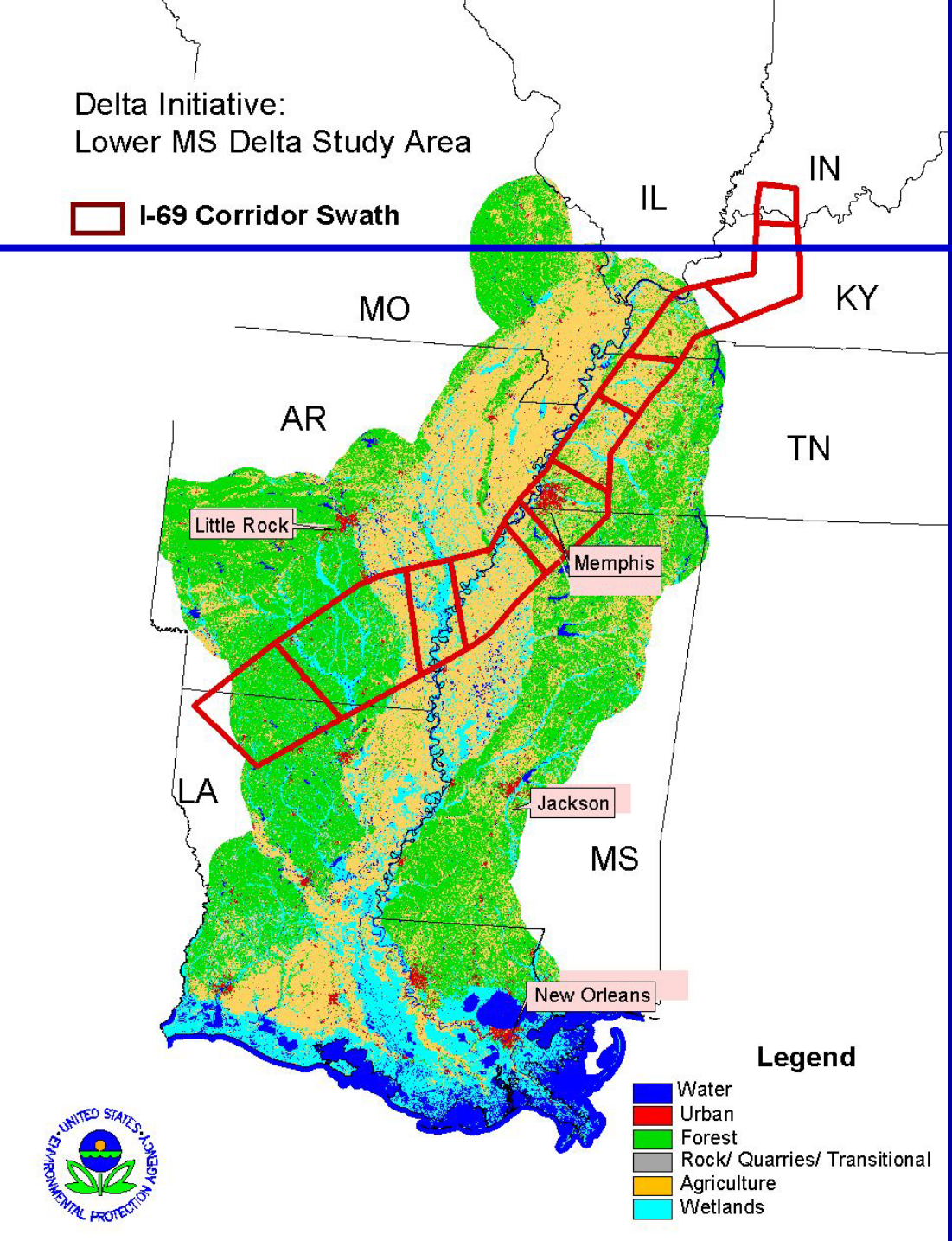
Proposed

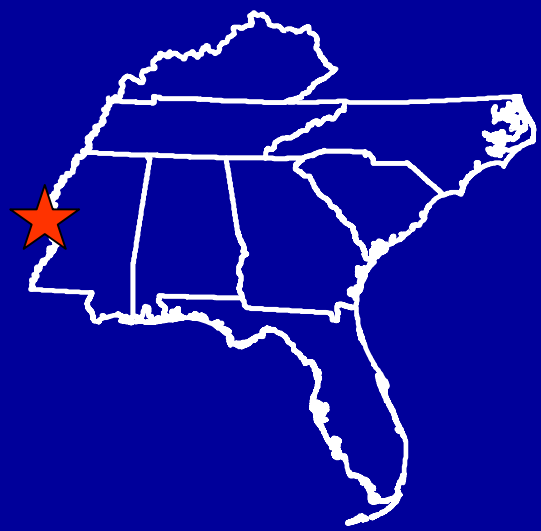
Southeastern Ecological Framework

EPA Applications

- National Environmental Policy Act
- Wetlands Protection
- Surface Water Protection
- Total Maximum Daily Load Development
- National Pollutant Discharge Elimination System Permitting
- Supplemental Environmental Projects
- Source Water & Wellhead Protection

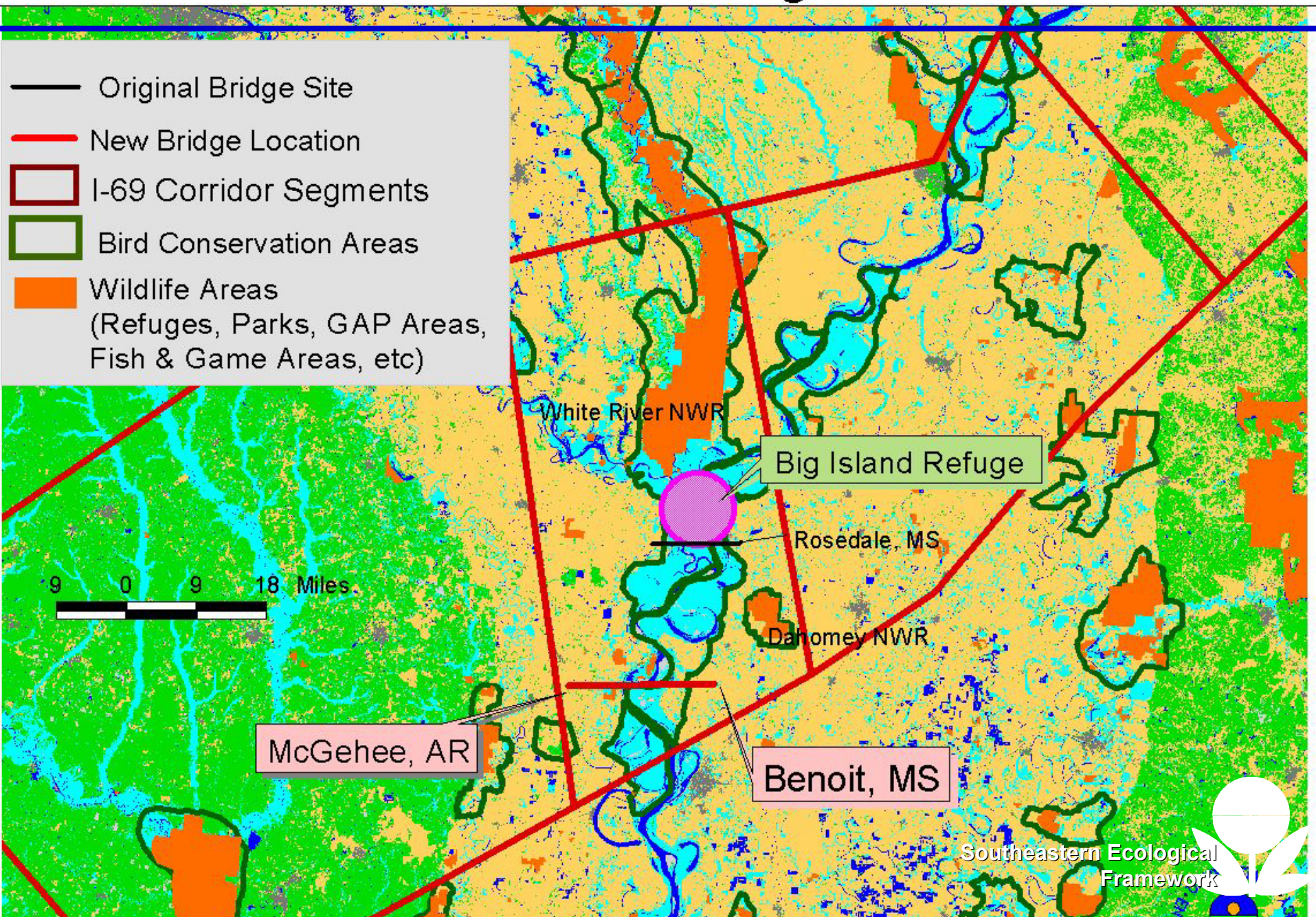
MS Delta I-69



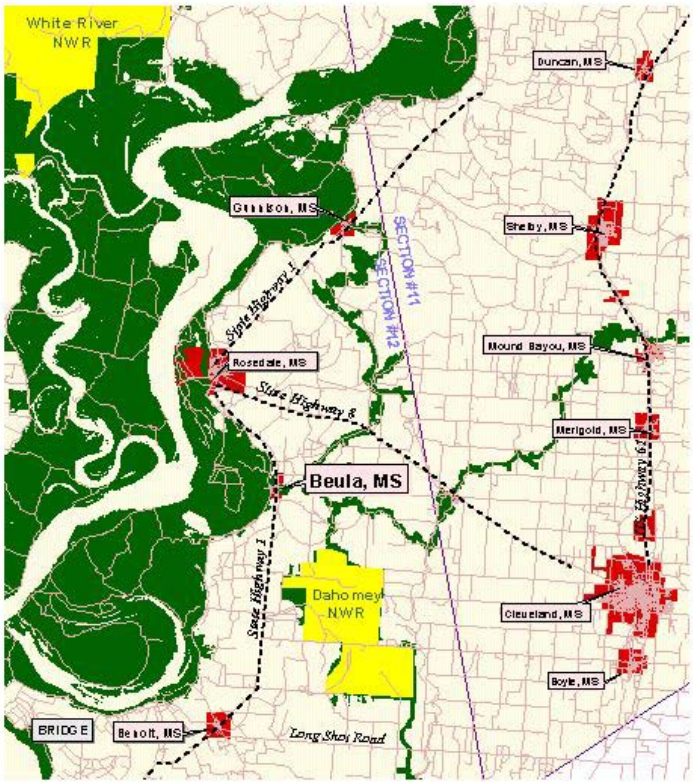


Southeastern Ecological Framework

Great River Bridge Area

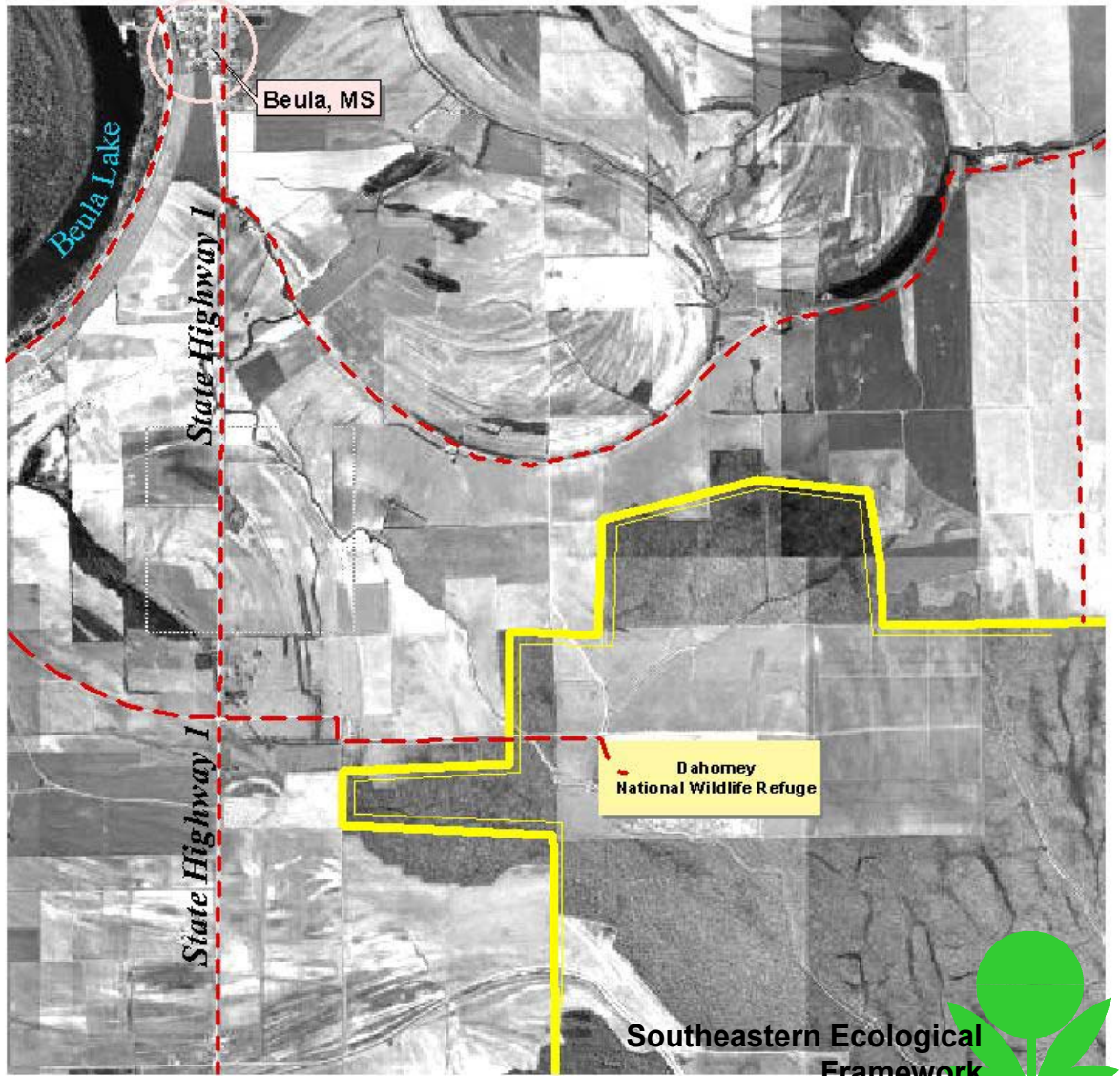


Sample 1m Data for Proposed Alignment



Roads
Conservation Land
Cities
I-69 Corridor

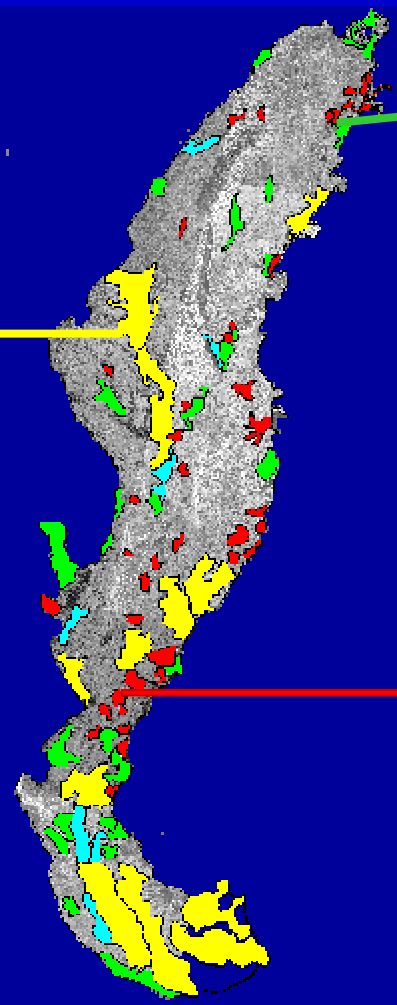
Ecological Network
Not in Eco Network
Ecological Network



Southeastern Ecological Framework

Bird Breeding Habitat Size Requirements

Swallow-Tailed Kite
>100,000 acres



Cerulean Warbler
20,000 acres

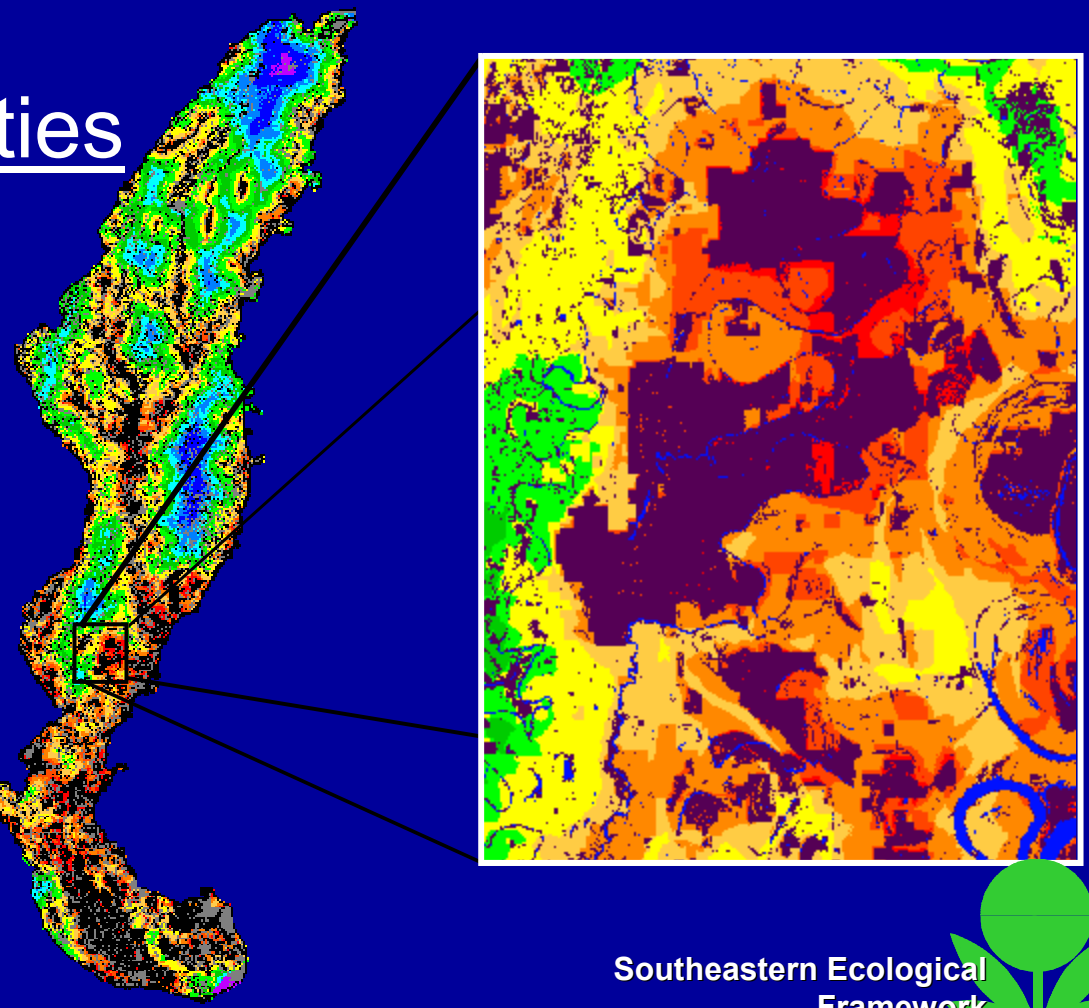
Swainson's Warbler
10,000 acres

Southeastern Ecological Framework

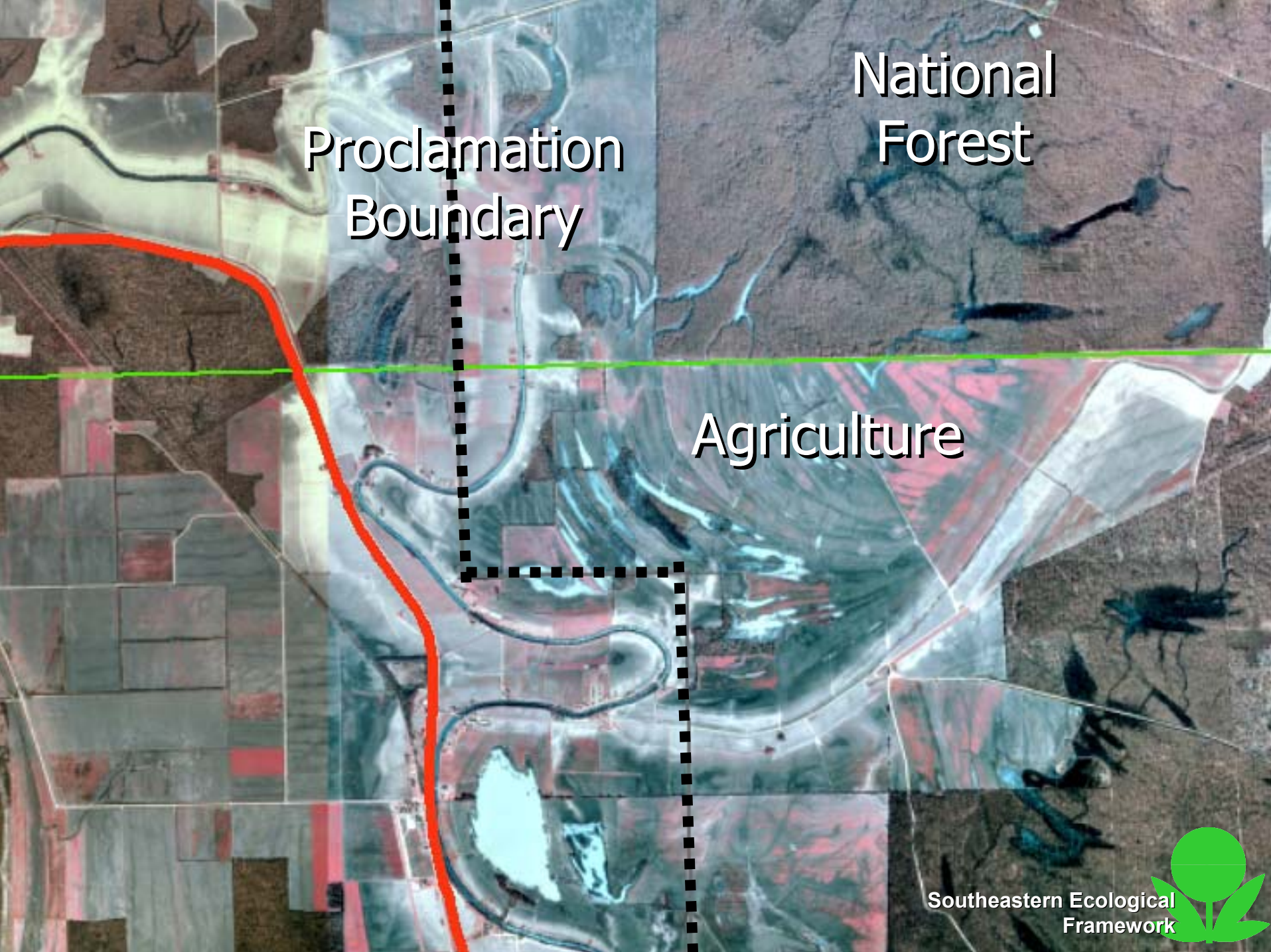
Economic and environmental sustainability have been the casualties of agricultural encroachment into the Delta's internationally significant wetlands.

Reforestation Priorities

- Forest Breeding Birds
- Carbon Sequestration
- Flood Plain Protection



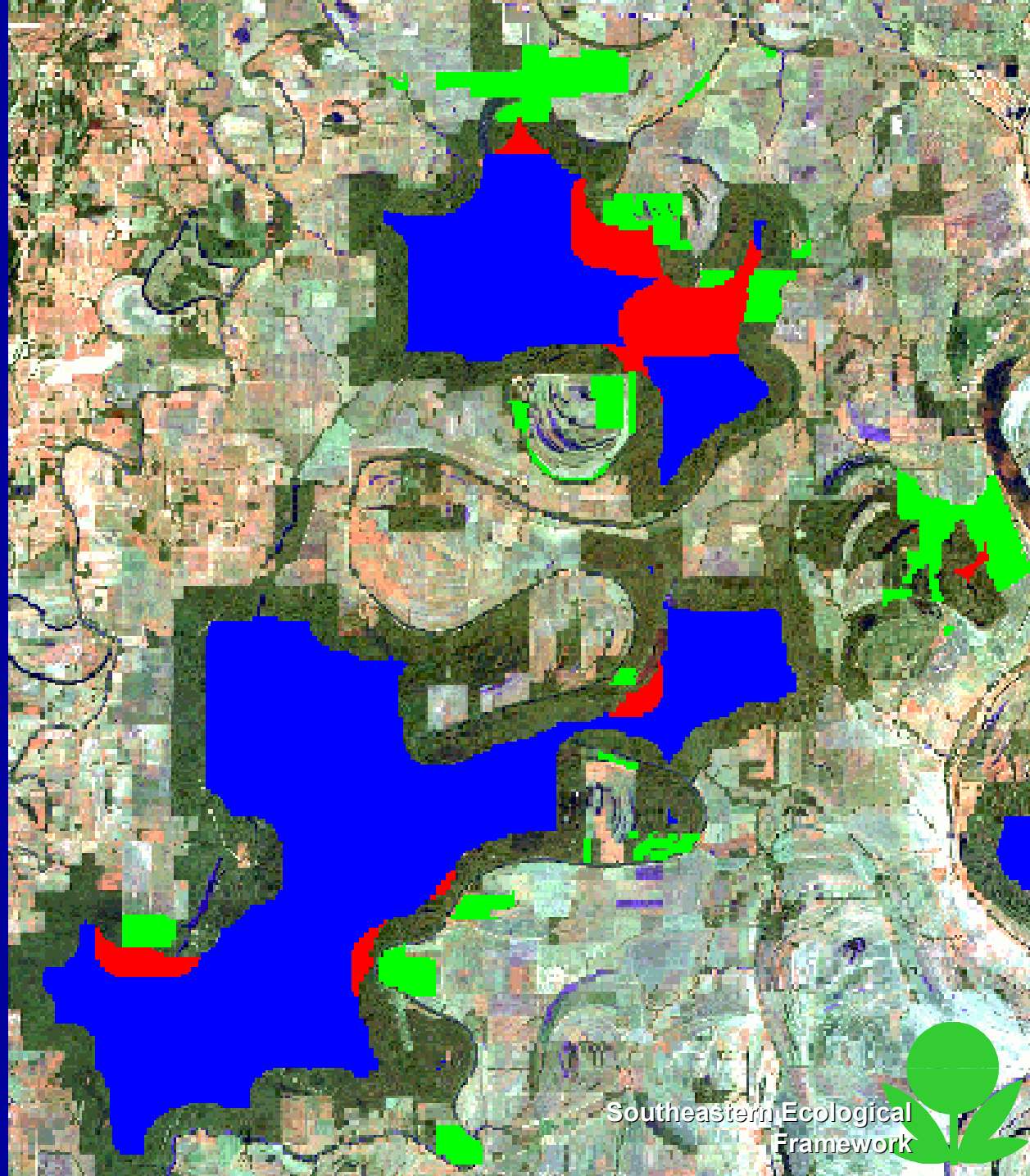
Southeastern Ecological Framework


Proclamation Boundary
National Forest
Agriculture
Southeastern Ecological Framework

Existing "Core"
40,507 acres

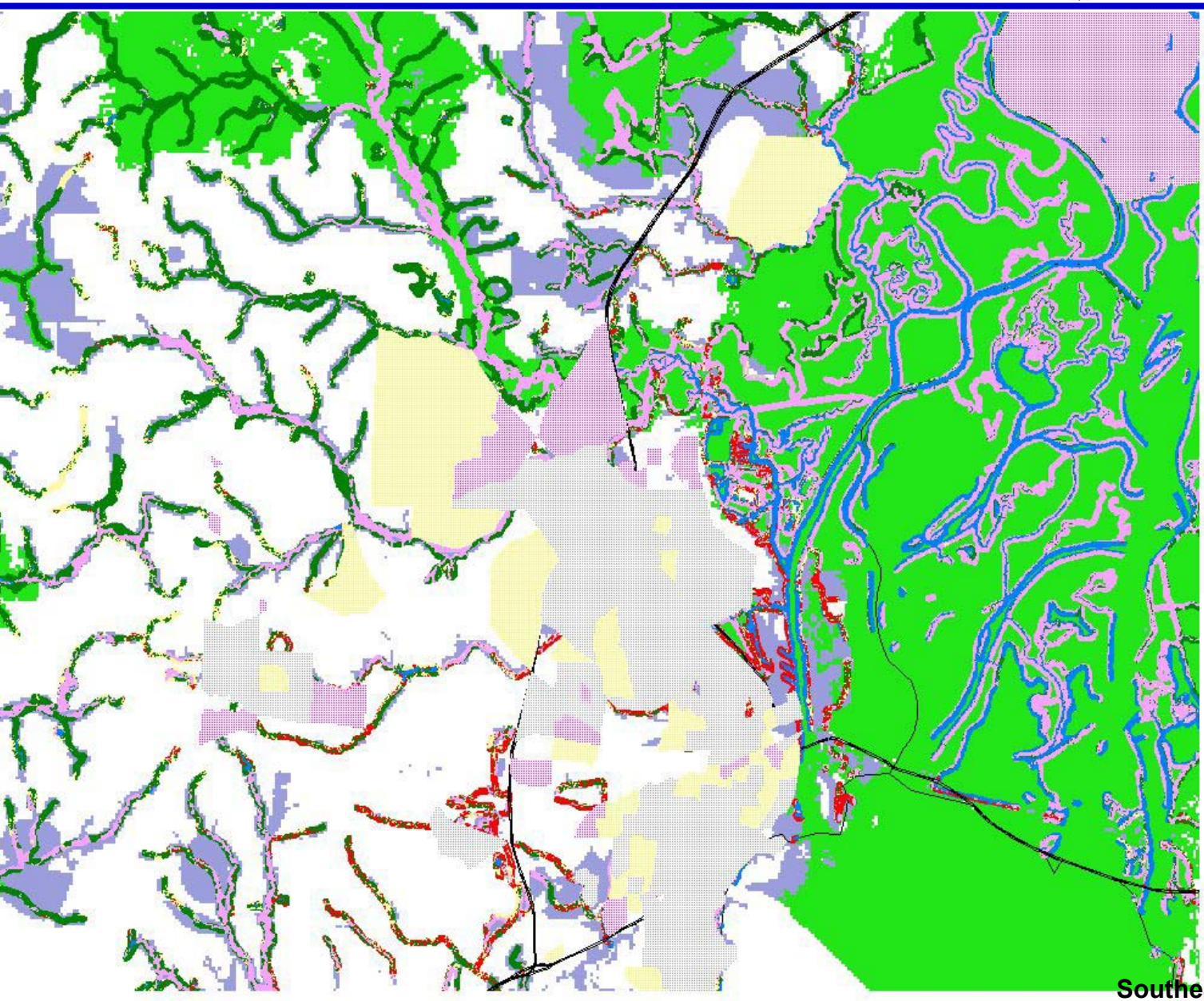
Reforested Areas
7,682 acres

Gain in Biological Core
4,862 acres



Southeastern Ecological Framework

Potential SEP Location in Mobile, Alabama

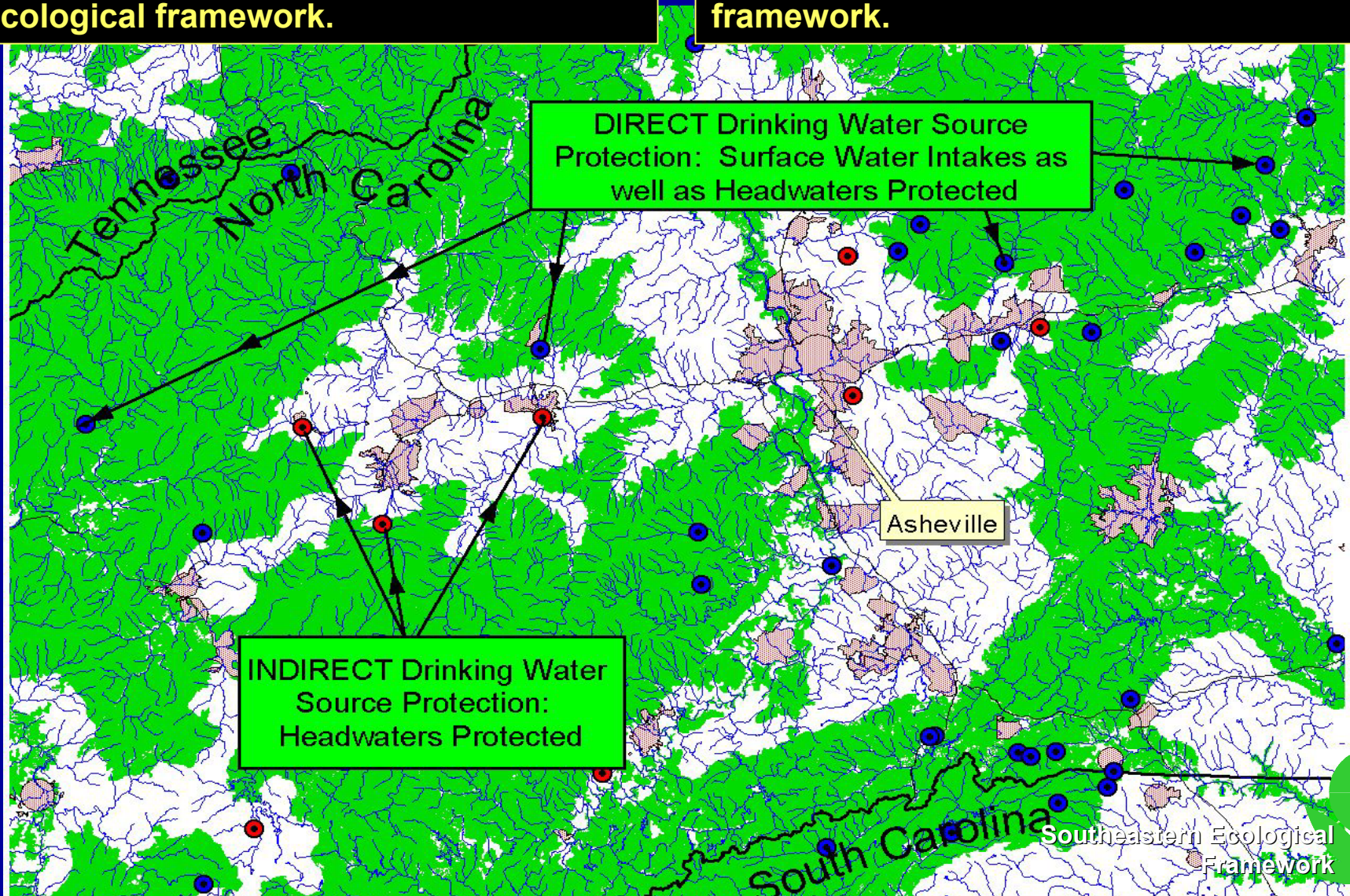


Southeastern Ecological Framework

Drinking Water Source Protection

Over 12 million people served by drinking water sources DIRECTLY protection (blue symbols) by the ecological framework.

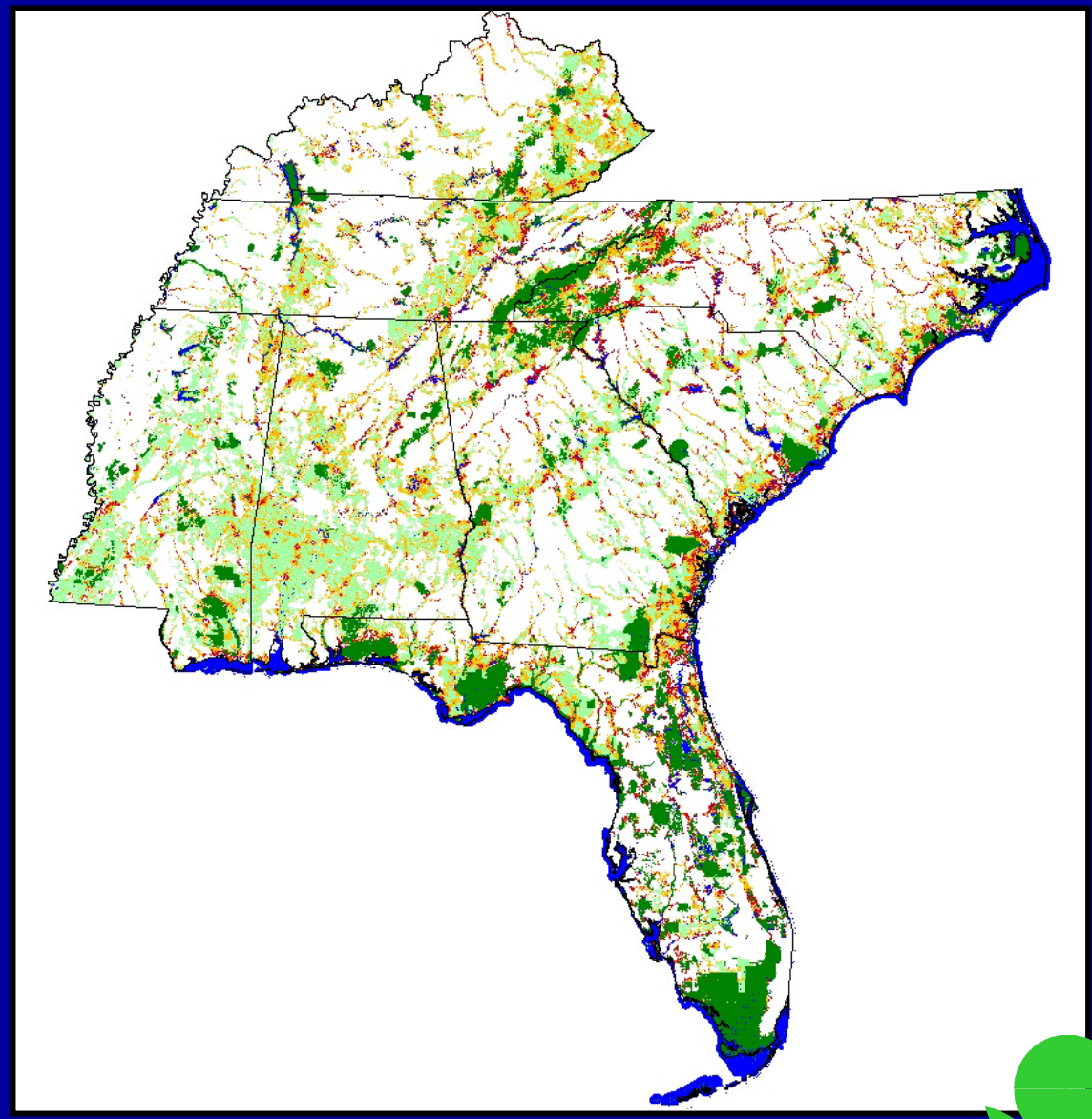
Up to 4 million additional users served by drinking water sources INDIRECTLY protected (red symbols) by the framework.



Southeastern Ecological Framework

SEF Conflicts

- SEF x Threats Model
- SEF
- Conservation Lands



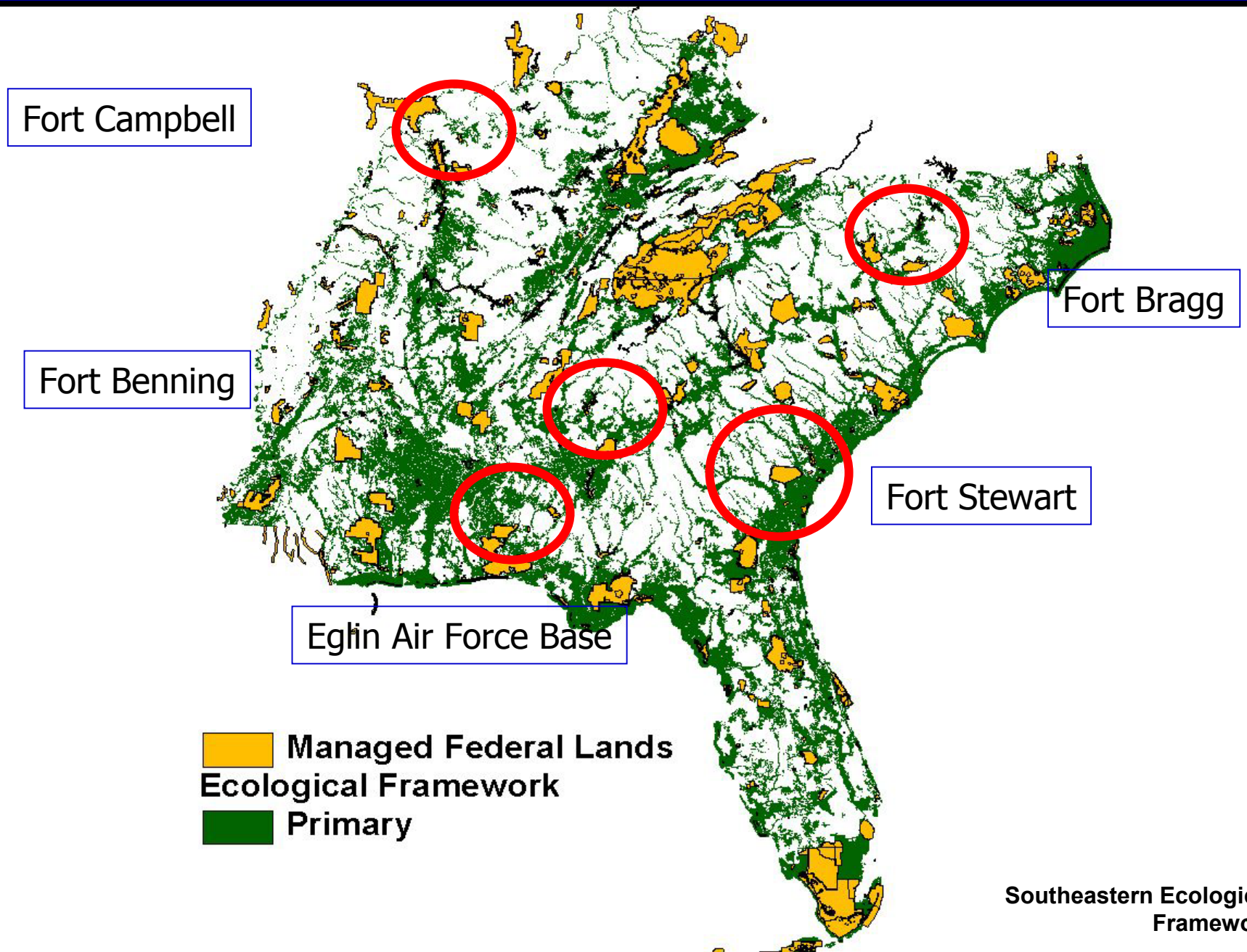
Southeastern Ecological Framework

Potential Federal Partnership Applications

Land Acquisition or Easements

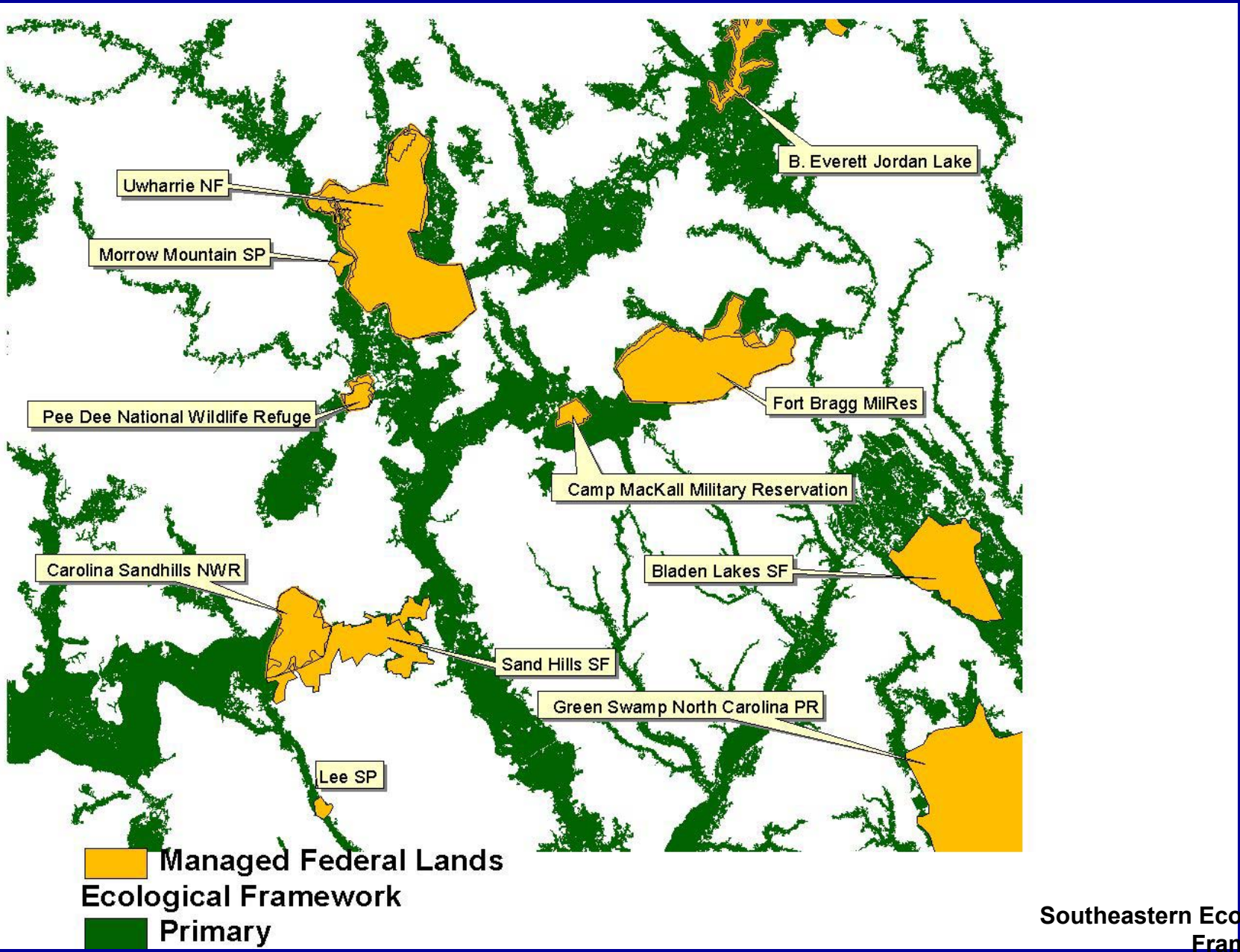
- DOD Base Closures or Expansions
  - WESTVACO Property
  - Camp MacKall/Fort Bragg Private Lands Initiative
  - Encroachment Buffers from Urban Sprawl
- Leverage NRCS Programs to Lengthen Conservation Easements and Reduce Pesticide Runoff
  - NRCS Conservation Reserve and Ducks Unlimited Dollars
  - NRCS Wetland Reserve and FEMA Hazard Mitigation Funds
- Buffer Existing Wildlife Refuges
  - Ensure Species Habitat Needs
  - Target Refuge Expansion

Connecting Existing Federal Lands for Co-benefits



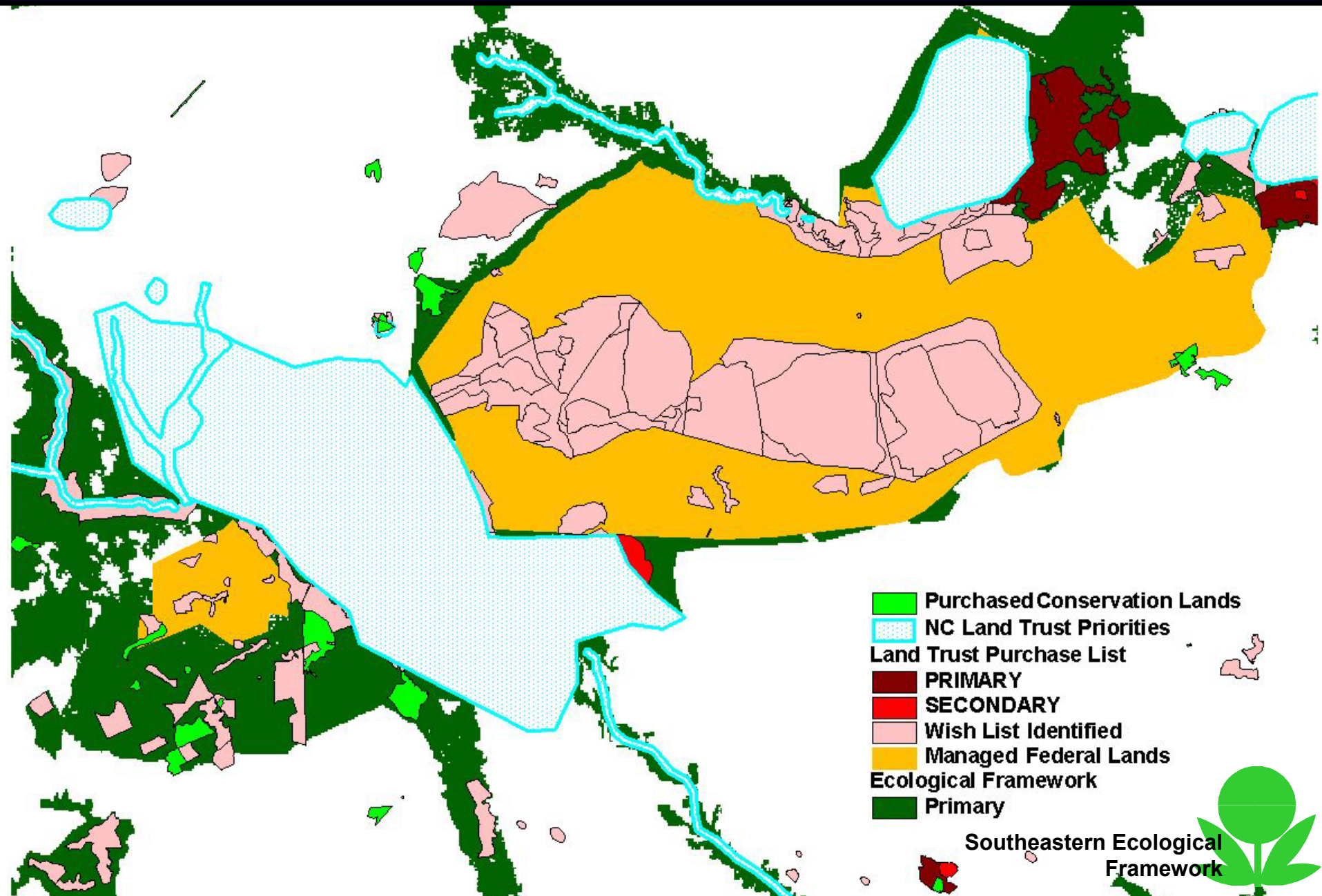
Southeastern Ecological Framework

Opportunities for Connectivity

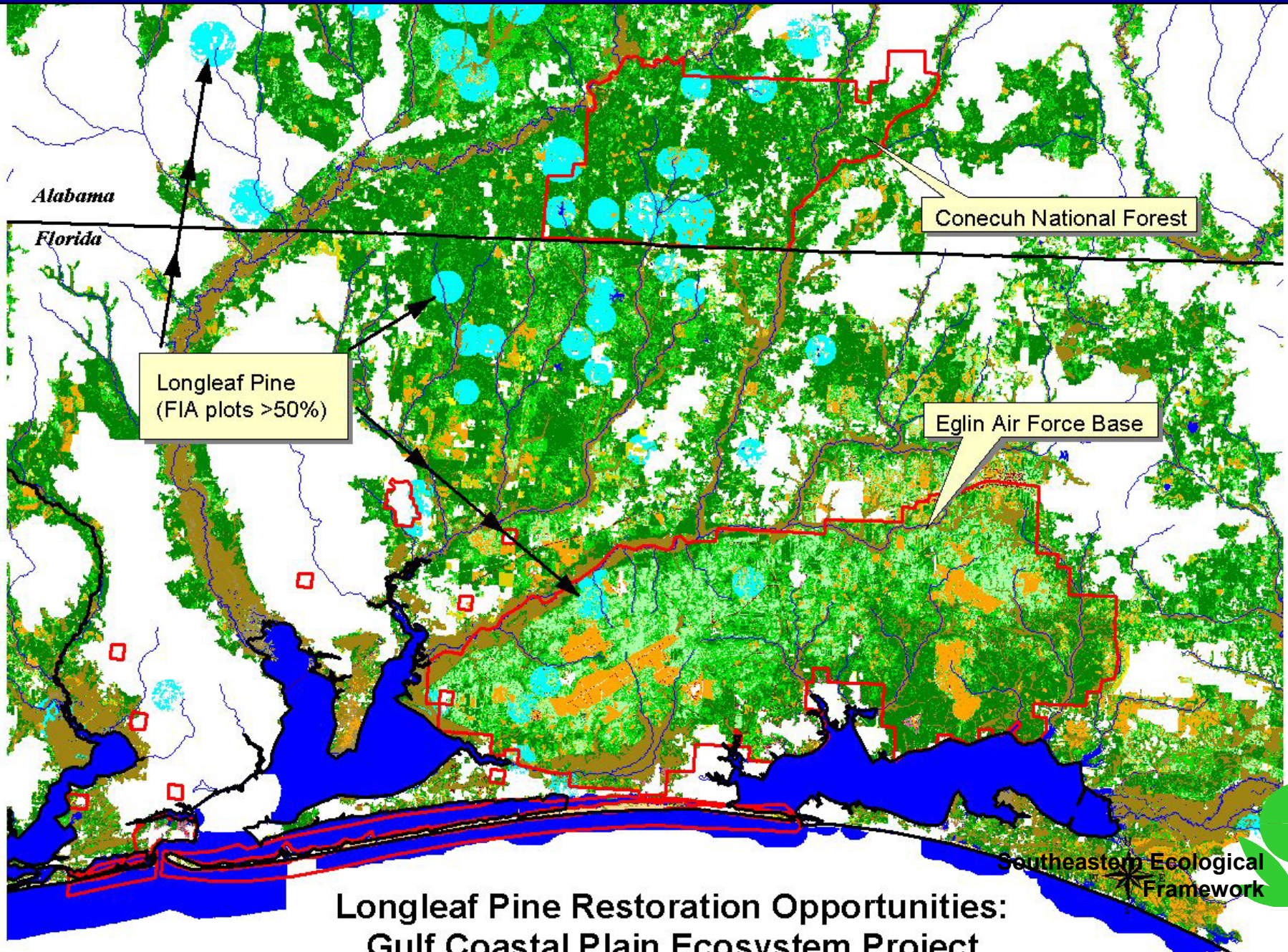


Southeastern Ecological Framework

Innovative Partnerships are the Key



Supporting the Primary Mission of Multiple Agencies



Longleaf Pine Restoration Opportunities:
Gulf Coastal Plain Ecosystem Project


Currently Characterizing the SEF
for Programmatic Activity and GPRA
Goals and Objectives